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BIOGEOCLIMATIC ZONES ON THE HAWAIIAN ISLANDS[1]

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There is a growing need for ecological studies of terrestrial habitats in the Hawaiian Islands. Such studies are more urgent now because the University of Hawaii is becoming more and more an important educational and research center. It is here that many students of different tropical countries seek their further and highest education for the economic and scientific advancement of their own developing countries.

The vegetational aspects of the Hawaiian Islands are rather unique by their vastly endemic flora. However, many introduced plants, which are becoming widely distributed now, constitute such biotic elements that the vegetational units are quite comparable with those of other tropical areas. Furthermore, in the Hawaiian Islands the environmental parts of their ecosystem units are such that they are repeatedly occurring in many other tropical mountainous regions with similar tropical, subtropical mesothermal, microthermal, and even alpine (polar) climates. These environmental complexes, by their climatic, edaphic, geologic, and topographic factors, constitute great educational assets that should be available to those who would like to study them as a scientific basis especially for multiple land use. They need to compare them with those of other similar regions. In this respect, the Hawaiian Islands possess much greater variation of climates and their respective biogeoclimatic zones than any other lands of the United States.

Certain ecological observations and studies, carried out on the Hawaiian Islands, were published by Rock (1913), Hosaka (1937), Egler (1939, 1947), Robyns and Lamb (1939), Hartt and Neal (1940), Ripperton and Hosaka (1942), Skottsberg (1942), Schwartz & Schwartz (1949) and Fosberg (1961).

1/ Paper presented at the 14th Annual Meetings of the American Institute of Biological Sciences (AIBS) for the Ecological Society of America at the University of Massachusetts on August 27, 1963. A preliminary form of this paper was presented at the Hawaiian Botanical Society meeting on June 4, 1962. Manuscript received Sept. 3, 1963. Hawaiian plant common names were checked with Pukui, M. K. & S. H. Elbert, Hawaiian-English Dictionary (1957).

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Table 1. Biogeoclimatic zones on the Hawaiian Islands.

Zonal Group	Zone No.	Zone Letters	Name	Altitude in feet	Main Exposure	Annual precipitation in ins.	Clouds	Mean annual temp. °F	Climate	Prevailing soil-forming processes
Semi-arid and subsemi-arid tropical	(1)	A	kiawe - pili - bristly foxtail	Less than 1000 on lee sides, or very low windward lands	SW	Less than 25	Very rare	75-76 (max 90)	Semiarid marine tropical	Calcification and leucinization
	(2)	B	koa haole - pa-nini kakonakona	Less than 3000 on lee sides, less than 1000 on windward sides	SW	25-40	Rare	72-75	Subsemi-arid marine tropical	Laterization and leucinization
Subhumid tropical and subtropical (low elev.)	(3)	C_1	guava - lantana - pukiawe - pala'a yellow foxtail	Less than 3000 on lee sides, on windward sides less than 2000	None	40-60*)	Occasional	71-75	Subhumid marine tropical	Laterization and leucinization
	(4)	C_2	koa - guava - pukiawe - 'ohelo	2500-4000	SW	40-60*)	Frequent	60-68	Subhumid marine subtropical (mesothermal)	Laterization and melanization
Humid tropical and subtropical (mesothermal)	(5)	$D\text{-}K_1$	koa - Boston fern (Kupukupu) basket grass - Hilo grass	Less than 3000 on lee sides, less than 2000 on windward sides	None	60-75*)	Very frequent	70-74	Humid marine tropical	Laterization and melanization
	(6)	$D\text{-}O_1$	'ohi'a-lehua - hapu'u - uluhe - wawae-'iole	Less than 4000 on windward sides	NE	75-100*)	Common	60-73	Humid marine tropical (or subtropical)	Laterization, weak podzolization, and melanization
	(7)	$D\text{-}C_a$	'olapa - lapalapa - hapu'u - 'ekaha-'ula - 'ohi'a-ku	Less than 6000 on windward sides	NE	100-140*)	Dense	60-70	Very humid marine subtropical or tropical	Podzolization and gleization of laterized soils

*Note: In the zones C_1, C_2, $D\text{-}K_1$, $D\text{-}O_1$, $D\text{-}C_a$, and $D\text{-}C_b$ relatively more frequent cloudiness may substitute for the lower precipitation than indicated in these zones.

Zonal soils	Dominant plant indicators	Vegetation cover	Land use
Red Desert	Prosopis chilensis (kiawe), Heteropogon contortus (pili), and Setaria verticillata (bristly foxtail)	Zerophytic savanna thorn-scrub grassland	Irrigated sugar cane, vegetables, banana, papaya, mango. Winter grazing (after rains).
Reddish Brown	Leucaena glauca (koa haole), Opuntia megacantha (pa-nini), and Panicum torridum (kakonakona)	Xerophytic thorn scrub forest	Irrigated sugar cane up to 1200 ft, pineapple above, vegetables, banana, papaya, mango. Taro in inundated places. Grazing especially after winter rains.
Low Humic Latosols	Psidium guayava (guava), Lantana camara (lantana), Styphelia tameiameiae (pukiawe), Sphenomeris chusana (pala'a), and Setaria geniculata (yellow foxtail)	Mixed xerophytic and mesophytic scrub forest	As above, Macadamia & litchi (marginally). Taro in inundated places. Grazing whole year. Forest when cultivated.
(Low) Humic Latosols	Acadia koa (koa), Psidium guayava (guava), Styphelia tameiameiae (pukiawe), and Vaccinium spp. ('ohelo)	More or less open mixed xerophytic and mesophytic forest	Too cool for sugar cane or pineapple. Grazing is major use. Forest when cultivated.
Humic Latosols	Acacia koa (koa), Nephrolepis exaltata (Boston fern, kupukupu), Oplismenus hirtellus (basket grass), and Paspalum conjugatum (Hilo grass)	Mixed mesophytic and xerophytic forest (closed)	Non-irrigated sugar cane, limited pineapple. Macadamia, litchi. Grazing. Forest of better qualities when cultivated.
Podzolic Humic Latosols	Metrosideros polymorpha ('ohi'a-lehua) Cibotium spp. (hapu'u), Dicranopteris spp. (uluhe), and Lycopodium cernuum (wawae-'iole)	Mesophytic marine tropical and subtropical forest	Forest reserve for water-shed management. Grazing in some cleared portions. Excellent forest under silviculture.
Hydrol Humic Latosols (weakly up to strongly podzolized)	Cheirodendron trigynum ('olapa), Cheirodendron platyphyllum (lapalapa), Cibotium spp. (hapu'u) Elaphoglossum spp. ('ekaha-'ula), and Mecodium recurvum ('ohi'a-ku).	Hygrophytic marine subtropical and tropical rainforest.	Water-shed. Good forest.

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Table 1. Biogeoclimatic zones on the Hawaiian Islands (continued from page 95)

Zonal Group	Zone No.	Zone Letters	Name	Altitude in feet	Main Exposure	Annual precipitation in ins.	Clouds	Mean annual temp. °F	Climate	Prevailing soil-forming processes
	(8)	D-C_b	lapalapa - 'oha-wai - hapu'u - 'ape'ape	Less than 6000 on windward sides	NE	140-200*)	Rainy	60-65	Rainy marine subtropical or tropical	Podzolization and gleization
	(9)	D-C_c	Oreobolus - Panicum - lau-kahi - Kuahiwi - Lobelia	2000-5800 feet	NE	200-466	Extremely rainy	60	Extremely rainy marine subtropical	Gleization
	(10)	D-O_2	'ohi'a-lehua - 'ama'uma'u - Boston fern (kupukupu) - uluhe	6000-6500 (Maui, Hawaii)	NE	75-100 Snow extremely rare (in winter)	Common	50-55	Humid marine subtropical (warmer)	Podzolization and laterization
	(11)	D-K_2	koa - Boston fern (kupukupu) - uluhe - brackenfern (kilau)	6500-8000 (Maui, Hawaii)	NE	60-75 Snow very rare (in winter)	Frequent	50	Humid marine mesothermal (cooler)	Podzolization and laterization
Subhumid mesothermal (high elev.)	(12)	E-K	koa - mamane - pukiawe - 'ohelo - brackenfern (kilau) - lovegrass	4000-8000 (Maui, Hawaii)	None	40-60 Snow very rare (in winter)	Occasional	50	Subhumid marine mesothermal	Weak podzolization and weak laterization
Subsemiarid microthermal (subalpine)	(13)	E-M	mamane - naio - pukiawe - pilo - 'ohelo - kukae-nene	7000-10,000 (Maui, Hawaii)	None	20-40 Snow occasionally (in winter)	Rare	40	Subsemiarid microthermal (Subalpine)	Not yet stabilized
Alpine	(14)	E-L	lichen (limu-haea) - moss (limu-'ahu-'ula) - bentgrass - silversword ('ahinahina)	10000-14000 (Maui, Hawaii)	None	15-30 Snow frequent in winter & may remain in sheltered places all year	Very rare	32	Semiarid tundral	Not stabilized

Zonal soils	Dominant plant indicators	Vegetation cover	Land use
Strongly podzolized hydrol Humic Latosols	As in D - C_a, and additionally: Cheirodendron dominii (lapalapa), Clermontia spp. ('oha-wai), and Gunnera spp. ('ape'ape).	Hygrophytic marine subtropical and tropical rain forest rich in bryophytic epiphytes	Water-shed
Alakai Bog Gleysols	Oreobolus furcatus, Panicum spp., Plantago spp. (lau-kahi-kuahiwi), and Lobelia spp.	Chamaephytic alakai bog	Water-shed
Latosolic Brown Forest Soils	Metrosideros polymorpha ('ohi'a-lehua), Sadleria spp. ('ama'uma'u), Nephrolepis exaltata (Boston fern, k'upukupu), and Dicranopteris spp. (uluhe)	Mesophytic subtropical forest	Water-shed. Forest
Latosolic Brown Forest Soils	Acacia koa (koa), Nephrolepis exaltata (Boston fern, kupukupu), Dicranopteris spp. (uluhe), and Pteridium aquilinum (brackenfern, kilau).	Mixed mesophytic and xerophytic more or less open forest	Grazing. Forest (under silviculture).
Latosolic Brown Forest Soils	Acacia koa (koa), Sophora chrysophylla (mamane), Styphelia spp. (pukiawe), Vaccinium spp. ('ohelo), Pteridium aquilinum (brackenfern, kilau), and Eragrostis spp. (lovegrass)	Mixed mesophytic and xerophytic more or less open scrub forest (chaparral-like)	Grazing. Potential forest (under silviculture).
Lacking, only lithosols and regosols (volcanic)	Sophora chrysophylla (mamane), Myoporum sandwicense (naio), Styphelia spp. (pukiawe), Vaccinium spp. ('ohelo), Coprosma montana (pilo), and Coprosma ernodeoides (kukae-nene).	Xerophytic scrub (more or less open)	National Park.
Lacking, volcanic lithosols and regosols only	Lichenes, Musci, Hepaticae, Agrostis spp. (bentgrass), and Argyroxiphium spp. (silversword 'ahinahina).	Semiarid barren alpine tundra	National Park.

BIOGEOCLIMATIC ZONES ON THE HAWAIIAN ISLANDS (continued from page 93)

Fourteen Hawaiian biogeoclimatic zones (Table I) are outlined according to field studies carried out by the author in 1961-62. They are modifications of the ten vegetation zones of Ripperton and Hosaka (1942), later applied and further elaborated by Schwartz & Schwartz (1949).

The geologically younger islands, Maui and Hawaii, differ from those of the other islands or their parts which are geologically much older. Their differences are great not only in their environmental complexes but also in their vegetational and pedological products. Thus, the Hawaiian Islands yield a great chance to study the effect of time on both vegetation and soil development.

Each of the fourteen Hawaiian biogeoclimatic zones has several distinct habitats which are under the control of either topographic, geologic, or biotic factors. In response to these factors, the habitats are usually represented by distinct plant communities. The number of such ecosystem units is increased by cultivated stands of introduced trees which have frequently great influence upon the structure of the original vegetation units. The other introduced plants (herbs and shrubs) also have their great influence upon the changes of the environmental factors. These ecosystems, indigenous as well as introduced, need to be studied in the future.

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CARL SKOTTSBERG, 1880 - 1963

E. H. Bryan, Jr.[1]

Dr. Carl Johan Fredrik Skottsberg was born at Kalshamn, Sweden, December 1, 1880. He died in Göteborg on June 14, 1963. He received his PhD from the University of Uppsala in 1907. On July 27, 1909 he married Inga Margareta Reuter, and they had two daughters and a son. Before and after this, Dr. Skottsberg took part in several expeditions: The Swedish Antarctic Expedition, 1901-1903; the Swedish Magellan Expedition, 1907-1909; and the Swedish Pacific Expedition, 1916-1917. The most extensive result of this was his editing three large volumes on Juan Fernandez and Easter Island, produced in parts, 1920 to 1952, and reprinted in 1954. He and his wife made a second expedition to the Juan Fernandez Islands, December 1954 to March 1955.

In Sweden, Dr. Skottsberg served as Lecturer in Botany at the University of Uppsala and Curator of the Botanical Museum there from 1909 to 1914. He became Director of the Göteborg Botaniska Trädgarden in 1919, continuing this position until 1948. In 1931 he also became Professor of Botany at the University of Göteborg and a Trustee of the Botanical Museum.

In Hawaii, a long and mutually helpful relationship with Bernice P. Bishop Museum was begun in 1922, when he was awarded a fellowship to study Hawaiian plants. This resulted in a bulletin making comparisons between Hawaii and the Juan Fernandez Islands, published by Bishop Museum in 1925. Dr. Skottsberg again collected plants in the Hawaiian Islands in 1926. It was at this time that he began studies of the revegetation of Hawaiian lava flows, assisted by the late Dr. Thomas A. Jaggar, Director of the Hawaiian Volcano Observatory. Five stations were laid out and carefully mapped on 1919 and 1920 lava flows. During 1934-35, Dr. Skottsberg was appointed the Bishop Museum Lecturer at Yale University. On his way back to Sweden in 1935, he spent two weeks studying Hawaiian plant specimens in the Kew Gardens and at the British Museum. On April 18, 1935, Dr. Skottsberg was appointed a Research Associate in Botany by Bishop Museum. In 1940 the title was changed to Associate in Botany, a relationship which continued up to the time of his death. In 1938 he initiated the Hawaiian Bog Survey, assisted by Lucy Cranwell and O. H. Selling. Some 500 peat samples were collected from the main Hawaiian Islands, and their analysis has provided such a wealth of information that in December 1941, Dr. Skottsberg wrote: "The success is triumphal. The development of Hawaiian mountain vegetation can be read in detail from the end of the Glacial period until now, and it seems possible to establish a parallelization with happenings in other parts of the globe." His last collecting trip to the Hawaiian Islands was January 20 to April 21, 1948, on his way to the 7th Pacific Science Congress in New Zealand.

Dr. Skottsberg took a leading part in the meetings and interim activities of the Pacific Science Association. He attended the 3rd congress in Japan, 1926; the 4th in Java, 1929; the 5th in Canada, 1933; the 6th in California, 1940; and was the official guest of the 7th congress in New Zealand in 1949, the last he was able to attend, although he contributed papers to the 8th and 9th (1953 and 1957). He was Secretary of the Standing Committee on the Protection of Nature from its formation in 1929 to the time when it was changed to a committee on Pacific Conservation in 1949, remaining a member of that committee.

Dr. Skottsberg was an authority on biogeography and plant taxonomy, as well as being an expert on the geography of various Pacific regions, such as the Juan Fernandez Islands, Easter Island, the Desventurades Islands (San Felix and San Ambrosio), the Falkland Islands, the southern Andes and Patagonia, and Antarctica. He worked and wrote exten-

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sively about such plant genera as Artemesia, Myoporum, Peperomia, Scaevola, Pipturus, Santalum, Vaccinium and other Ericaceae, Astelia and other Liliaceae, Canthium and the flowers of other Rubiaceae, Violaceae, and Nyctaginaceae. He also was interested in ferns and their distribution; in the marine algae of the extreme southern seas; and the relationship between Antarctic plants and those of Polynesia. He extended his study of the flora to include the history of the Pacific basin. He investigated chromosome numbers in Hawaiian flowering plants. He traced the phytogeography of the conifers in southwestern South America. He took an active part in International Botanical congresses. His bibliography is a long one, and he was active in a number of scientific organizations.

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WOOD, R. D. (Jul. Aug.) 1963. Characeae in Samoa. Torrey Bot. Club, Bul. 90(4):225-229, figs. 1-8.

YOUNGE, O. R. & D. L. PLUCKNETT. (Jan.) 1963. Zinc deficiency reduces Hawaii crop yields. Haw. Farm Sci. 12(1):4-6, figs. 1-4.

NEW PUBLICATIONS*

DIRECTORY OF BOTANISTS:

Bryan, E. H., Jr. 1963. Pacific Botanists 1963. Pacific Scientific Information Center, B. P. Bishop Museum ($1.00).

The earlier list of scientists was compiled by F. R. Fosberg with additions by M. S. Doty. This revised version lists over 1,250 botanists and includes an index of geographical and subjects interests as well as a residence index. Information queries were sent last year to all the botanists listed in the 1961 edition and additional names and information were obtained.

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*Compiled by Alvin K. Chock

N E W P U B L I C A T I O N S (continued from page 103)

MAN IN THE PACIFIC:
Number 1 of this new international newsletter was issued in July. It is primarily devoted to Pacific anthropological activities, and serves as an informal and informative means of communication between persons of diverse occupations and backgrounds who work with any phase of man in Polynesia, Micronesia, Melanesia, and New Guinea. It will appear as the occasion arises rather than at regular intervals. This mimeographed media is published by the Pacific Scientific Information Center, B. P. Bishop Museum.

PROCEEDINGS OF THE CONSERVATION CONFERENCES:
The papers presented at the Annual Conservation Conferences have been published in a mimeographed form by the Conservation Council for Hawaii. They may be obtained from the Council at the B. P. Bishop Museum. The contents of each are described below:

CONSERVATION COUNCIL FOR HAWAII. 1963. Outdoor recreation and conservation in National, State, and City & County parks and forest areas. Proceedings of the First Annual Conservation Conference, Feb. 8, 1962. 49 pp.
(Introductory remarks, William V. Ward (Conference Chairman), p. 4; Opportunities for outdoor recreation use of forests and other wild lands, John R. McGuire, pp. 5-10; Preservation of plants and wildlife, Michael Ord, pp. 11-16; Seashore areas, Richard D. Sias, pp. 17-24; Recreation and resource planning, DeWitt Nelson, pp. 25-33; Multiple uses of City and County Parks, Theodore F. Nobriga, pp. 34-36; Nene Progress report, J. Richard Woodworth, pp. 37-41; State park possibilities of large estates and corporations, Frank Midkiff, pp. 42-49).

CONSERVATION COUNCIL FOR HAWAII. 1963. Progress and planning for Hawaii's future. Proceedings of the Second Annual Conservation Conference, Feb. 12, 1963. 53 pp. (W. Michael Ord, Conference Chairman).
(Governor's address, Hon. John A. Burns, pp. 3-4, 17-18; Implementing the state land use law, Donald H. Wolbrink, pp. 6-14; A national tropical botanic garden for Hawaii and conservation, W. W. G. Moir, pp. 15-16, 5; The National Park Service and outdoor recreation, Fred T. Johnson, pp. 19-28; Na Laau Hawaii Arboretum, C. H. Lamoureux and A. A. Carswell, pp. 29-32; Protecting natural resources by sound land planning, Alan S. Davis, pp. 33-38; Progress and planning for Hawaii's future, Roland W. Force, pp. 39-44; George C. Munro, Roland W. Force, pp. 45-46; The state's wildlife management program, Michio Takata, pp. 47-52; Executive Board of the Council for 1963, p. 53).

BISHOP MUSEUM LIST OF PUBLICATIONS:
Two new lists of publications of the Bishop Museum Press were issued in July. The first includes the Memoirs, Bulletins, Special Publications, Tenth Pacific Science Congress Publications, and Books about Hawaii. The second includes the Occasional Papers series. A separate mimeograph list of the Insects of Micronesia series is also available. The new price lists may be obtained from the Bishop Museum Press, Honolulu, Hawaii, 96819.

TENTH PACIFIC SCIENCE CONGRESS PUBLICATIONS:
BARRAU, JACQUES (Editor). (August) 1963. Plants and the migrations of Pacific peoples. v + 136 pp., 31 figs., 11 tabs. Bishop Museum Press ($4.00).
This symposium of the Tenth Pacific Science Congress, held in Honolulu in 1961, deals with ethnobotany. Pacific ethnobotany has many aspects and the papers included in this publication cover many different plants. The papers presented were: Introduction, Jacques Barrau, pp. 1-6, figs. 1-4; Movement of people and ideas across the Pacific, George F. Carter, pp. 7-22; Prehistoric voyages as agencies for Melanesian and South American plant and animal dispersal to Polynesia, Thor Heyerdahl, pp. 23-36, figs. 1-3; Vernacular plant names in Melanesia: Some examples from Northern New Caledonia, A. G. Haudricourt, pp. 37-38; Correlations of plant patterns and population migration into

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N E W P U B L I C A T I O N S (continued from page 104)

the Australian New Guinea highlands, R. G. Robbins, pp. 45-59, figs. 1-7; The role of Pandanus in the culture of the Marshall Islands, Benjamin C. Stone, pp. 61-74, figs. 1-4, tab. 1, and Appendix: Marshallese cultivar index and distribution of the names by atoll, pp. 75-82; The migration of rice from mainland Southeast Asia into Indonesia, J. E. Spencer, pp. 83-89, fig. 1; Rice cultivation of the ancient Mariana islanders, Ichiro Yawata, pp. 91-92; Sweet-Potato variation and its relation to human migration in the Pacific, D. E. Yen, pp. 93-117, figs. 1-9, tabs. 1-5; The origin of the sweet potato plant, Ichizo Nishiyama, pp. 119-128, figs. 1-3, tabs. 1-5; and The Oceanian-African hypotheses and the sweet potato, Harold C. Conklin, pp. 129-136.

MICRONESICA:
Volume 1, Number 1, of Micronesica, a journal of the College of Guam which is devoted to the sciences in Micronesia, is scheduled for publication in November. It will be published semi-annually, with an annual subscription price of $3.00. It is a forum for original research in the fields of physical and social anthropology, archaeology, linguistics, systematic botany, systematic zoology, ecology, marine sciences, and related disciplines concerned primarily with Micronesia and adjacent regions of the Pacific. Benjamin C. Stone, Department of Biology, College of Guam, is the General Editor. Members of the Board of Editors include L. B. Trott (Zoology), College of Guam; F. Raymond Fosberg (Botany), U. S. Geological Survey, Washington, D. C.; Donald P. Abbott (Zoology), Hopkins Marine Station, Pacific Grove, Calif.; Saul Riesenberg (Anthropology), Smithsonian Institution, Washington, D. C.; W. S. Wilson (Anthropology), College of Guam; Gregorio Velasquez (Botany), University of the Philippines; Yoshio Hiyama (Zoology), Department of Fisheries, University of Tokyo; and Ward H. Goodenough (Anthropology), University of Pennsylvania.

Forthcoming articles in Micronesica in Botany include the following articles: FOSBERG, F. R., Catalog of the flowering plants of Guam, and The effects of Typhoon Karen (1962) on the vegetation of Guam; HU, SHING-YU, The Genus Ilex in Polynesia and Micronesia; SMITINAND, TEN, The genus Cycas in Thailand; and STONE, BENJAMIN C., Additions to the flora of Guam. Further articles in preparation include those by HARVEY A. MILLER (Micronesian bryophytes), OTTO DEGENER (floristic studies), F. R. FOSBERG, and others.

Further information about the journal, including subscriptions, should be sent to the General Editor, Micronesica, College of Guam, Box 97, Agana, Guam.

P A C I F I C S C I E N C E A S S O C I A T I O N I N F O R M A T I O N *

Chairmen of Standing Committees: Botany: Dr. F. R. Fosberg, Pacific Vegetation Project, c/o National Research Council, Washington 25, D. C.; Conservation: Harold J. Coolidge, Pacific Science Board, National Academy of Sciences--National Research Council, Washington 25, D. C.; Crop Science, M. C. Chakrabandhu, Department of Agriculture, Ministry of Agriculture, Bangkok, Thailand; Forestry: Dr. Florencio Tamesis, Philippine Wallboard Corporation, Manila, Philippines; Marine Sciences: Dr. Milner B. Schaefer, Institute of Marine Resources, University of California, San Diego, California; Museums in Pacific Research: Dr. Roger Duff, Canterbury Museum, Christchurch, New Zealand.

UNESCO Science Program, 1963-64: The following are abstracts of summary extracts from the program of the Department of Natural Sciences of Unesco for 1963-64.

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*PSA Info. Bul. 15(2):1-15, March-April 1963

PACIFIC SCIENCE ASSOCIATION INFORMATION (continued from page 105)

International Advisory Committee on Research: This will be reconstituted with enlarged competence; the committee will consist of scientists belonging to the group of makers of governmental policy in science and to the United Nations and intergovernmental organizations and agencies; presidents and secretaries of international scientific unions; and eminent scientists as needed. It meets bi-annually, with the ninth session in 1963.

Improvement of scientific documentation services: With the aid of the International Advisory Committee on Bibliography, Documentation and Terminology, working parties will convene this year to survey ways and means of improving present scientific information and documentation. A final technical working group will convene in early 1964 to define the specific action to be suggested for scientific documentation.

Modern methods of research and exploration of natural resources: An international interdisciplinary conference on principles and methods of scientific land exploration will be organized in 1964 to deal with photo interpretation and other aerial survey techniques for natural resources studies. The conference proceedings will be published in 1965.

Cooperative program in soil biology: Reviews of research will be prepared and exchange of information between soil biologists will be promoted. A study will be made of the possibility of proposing a broad plan for international cooperation of micro-organism research.

Humid Tropics Research Program: A long-term plan for exchange of information and cooperation among scientists engaged in specific fields of humid tropics research was decided upon by the Humid Tropics Advisory Committee in 1961. Implementation of the plan began in 1962 and will continue on an expanded scale in 1963-64.

Conservation of Natural Resources: Member States are urged to pay due attention to the conservation, restoration, and enrichment of their natural resources, flora and fauna.

Assistance to the International Indian Ocean Expedition: Meetings for the analysis of results will be supported, as well as the publication of data and reports.

Assistance to national and regional oceanographic laboratories: In Southeast Asia, existing institutes will be strengthened by the provision of equipment, assistance of experts, and intensifying training.

U.S. - Japan Scientific Cooperation: The second conference of the U.S. - Japan Committee on Scientific Cooperation was held in Tokyo on October 22-24, 1962 to develop administrative procedures to implement the recommendations of the first meeting held in December 1961. The National Science Foundation is designated as the principal coordinating, adminstering, and funding agency for the U. S. participation in the joint programs. Projects involving Japanese scientists will be administered by the Japan Science for the Promotion of Science.

Program development and project selection will be based upon the program areas identified and recommended by the Committee; the activity should be of high scientific quality and beneficial to both countries, with results available for general publication; participation must include both Japanese and American scientists; and cooperative projects should provide an effective and efficient mechanism for advancing science in both countries.

Program areas include Studies of animal, plant, and population genetics as they apply to Pacific flora and fauna, with particular reference to the use of biochemical and biophysical methods; and studies of strains of rice blast fungus.

Sub-Committee on Pacific Systematic Botany: Dr. F. R. Fosberg, Chairman of the Association's Committee, announces that Professor Masami Sato, Biological Institute, Ibaraki University, Mito, Japan, has agreed to become chairman of this sub-committee.

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PACIFIC SCIENCE ASSOCIATION INFORMATION (continued from page 106)

Pacific Field Research: A Foreign Field Research Program is supported by the Geography Branch of the Office of Naval Research, U. S. Navy, and adminstered by the Division of Earth Sciences of the National Academy of Sciences--National Research Council. The program provides opportunities for young American scientists to undertake studies abroad on subjects of their own choosing and included "Man, plants and landscape in Marquesan Valleys, French Polynesia" by John W. Humphrey, Northwestern University, for 13-1/2 months of field work.

Forest Products Research: FAO's Fifth Wood Technology Conference was held at the U. S. Forest Products Laboratory in Madison on September 16-27. Agenda items include the testing of mechanical properties of timbers; classification of wood-based materials; wood preservation; and cooperation among international organizations in forest products research and development.

National Parks Policy: The "National Parks Magazine" (April 1963), published by the National Parks Association, contains an extensive report prepared by the Advisory Board on Wildlife Management, appointed last year by Secretary of the Interior Udall. It includes the following: "The goal of managing the national parks and monuments should be to preserve, or where necessary to recreate, the ecologic scene as viewed by the first European visitors...

"A second statement of policy...is that management be limited to native plants and animals. Exotics have intruded into nearly all of the parks but they need not be encouraged, even those that have interest or ecologic values of their own...A visitor who climbs a volcano in Hawaii ought to see mamane trees and silverswords, not goats...

"Roadless wilderness areas should be permanently zoned...to maintain or create the mood of wild American...the whole effect can be lost if the parks are overdeveloped for motorized travel.

"We urge to National Park Service to reverse its policy of permitting these non-conforming uses (as golf courses, ski lifts, motorboat marinas, etc.), and to liquidate them as expeditiously as possible...Above all other policies, the maintenance of naturalness should prevail."

BOTANISTS' EXPEDITION ON LANAI

(Ed. Note: The following paragraphs are excerpts from a letter written to the Editor by Otto Degener, who, with his wife, have been botanizing on the Island of Lanai since June and plan to be there until January 1964.)

Dear Al:

We are so terrifically busy ... (that) we lack the time to inform you that we have received a $2,000 NSF grant and on the strength of this have rented a cottage and a jeep for six months field work on Lanai. ... the grant is for field work only. ...

We were last browsing about Lanai 5-6 years ago. Since that time the status of the native flora has deteriorated greatly. We simply can't get away from the fact that ubiquitous man is entitled to certain activity which does not encourage the continued existence of the endemic biota. The debatable question is how much of his activity is justifiable and how much (fauna long-range man welfare standpoint) is not.

Along the Munro Trail, the former shrubby rain-forest is conspicuous by the erect, driftwood-like branches of small, dead trees where 5-6 years ago these were in foliage, flower, and fruit. Very few old trees are still alive, the few survivors being mostly

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BOTANISTS' EXPEDITION ON LANAI (continued from page 107)

sickly Tetraplasandra, Pittosporum, Antidesma, Gouldia, and Straussia. Seedling trees are conspicuous by their absence. It appears that the natives are being starved out by an influx of exotic grasses like Melinis, Panicum, and Paspalum, while the purple liliko'i smothers some natives. No one is directly to blame for the influx of grasses ...

A few areas along the trail have been completely denuded of natives by the New Zealand manuka (Leptospermum); and particularly at Lanaihale, the beautiful, white-flowered "Cherokee rose" with painful thorns is taking over. This last should be eradicated with just as much strenuous effort as the stink bug newly come to Lanai. This rose threatens to alter the penetrable fog-belt of Lanai to an impenetrable tangle of thorns reminiscent of Kokee with its blackberry. We noticed at a lower elevation in a forestry planting, the beautiful but disastrous Melastoma malabathricum. Perhaps it came accidentally with nursery stock.

Deer or antelope have practically exterminated the endemic Sesbania growing on the dry northern slope, and deer are damaging the dry forest growing at Kanepuu. They have killed the giant Hibiscus brackenridgei tree and are trampling native tree seedlings. We hope September's hunter pressure will help save this last remnant of a forest that once covered most of the drier areas of Lanai. It may interest you to know that our dog Teddy chased an axis deer buck at Kanepuu, unfortunately caught up with it, and needed medical attention for a clean stab wound that luckily just missed penetrating the lung.

Since the native plants of Hawaii Nei are doomed, not all of them now, nor tomorrow, nor the day after, but certainly within a relatively short time for replacement by crop, fodder, and timber plants and swarms of cosmpolitan weeds, it is inspiring that NSF is enabling us to collect still available endemics for the educational institutions of the world. If we cannot preserve our flora in a living condition in this age where exploitation is interpreted as "conservation", we shall at least have preserved specimens for the intellectual delight of future generations.

Lacking source books, we are unable to state with certainty which of our finds are novelties. We suspect many are: Cyanea, Lipochaeta, Bidens, Chamaesyce, etc.

Isa and I are so sorry we simply are too busy to answer your letter. It takes me an hour in the A.M. and another in the P.M. simply to fill and relight the 6-8 Coleman lanterns we use for our six foot long drier ...

O.D.

JOSEPH F. ROCK MEMORIAL LIBRARY

The Joseph F. Rock Memorial Library was recently founded at the Foster Botanical Garden in Honolulu as the central repository of botanical and horticultural literature for the Honolulu Botanic Gardens.*

This name posthumously honors Dr. Joseph F. Rock, who for many years was a frequent and dedicated contributor of exotic plants to Foster Garden. A world renowned botanist, he dedicated his life to botanical exploration and made many significant contributions to our knowledge of plants.

The physical plant for the new library is in the planning stage and will provide the institution with every convenience of modern library science. The building will be located on the Foster Garden grounds.

Many fine gifts from professional botanists and private citizens are presently being accumulated and cataloged to form the nucleus of the library collection. Gifts from private individuals become the property of the Friends of Foster Garden, but form a permanent part of the collection.

*Honolulu Botanic Gardens is the name given to the several areas in operation or projected as City and County botanical gardens, and include the Foster Botanical Garden, Wahiawa Botanic Garden, Lyon Botanical Garden, Kapiolani Park Hibiscus Garden, and others. The name was given by executive order of T. F. Nobriga, Director, Department of Parks and Recreation, City and County of Honolulu.

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B O T A N I C A L N O T E S

HAWAIIAN ACADEMY OF SCIENCE: The officers and committee chairmen for the Academy year 1963-64, who will welcome your advice in developing an interesting, useful, and successful program, are as follows: President: Dr. Donald P. Gowing, PRI, tel. 90-981; President-Elect: Dr. Roland W. Force, Bishop Museum, 855-951; Secretary: Dr. Robert L. Fox, Univ. Hawaii, 9679-549; Treasurer: Mrs. Eleanor S. Anderson, Bishop Museum, 855-951; Councilors: Dr. Leonard D. Tuthill (past president), Univ. Hawaii, 9679-301; Samuel D. Allison, M. D., 934-525; William Bush, Castle & Cooke, Inc., 511-611; Dr. D. Elmo Hardy, HAES, 9679-276, 432; and Dr. E. Alison Kay, Univ. Hawaii, 9679-203. Committee chairmen are: Publications - Dr. O. A. Bushnell, Univ. Hawaii, 9679-553; Membership - Dr. G. A. Johannessen, PRI, 90-981; I. S. S. E. C. - Dr. Donald P. Gowing, PRI, 90-981; Program - Dr. John M. Digman, Univ. Hawaii, 9679-362; Fellowship and AAAS Representation - Dr. Shosuke Goto, Univ. Hawaii, 9679-593; Nominating - Dr. Doak C. Cox, Univ. Hawaii, 9679-260; Public Information - J. Bernard, Van Waters & Rogers, 507-431; Conservation Council Representative - Dr. Charles H. Lamoureux, Univ. Hawaii, 9679-218; and Index - Dr. Albert J. Bernatowicz, Univ. Hawaii, 992-051.

The 1961-62 Proceedings (37th annual meeting) were mailed to members during the earlier part of the summer and the 1962-63 Proceedings are scheduled for completion in the near future. (R. L. Fox)

HAWAIIAN TAXONOMISTS: Not many taxonomists have monographed genera of Hawaiian flowering plants in recent years. Among the leading authorities are Dr. T. G. Yuncker, who has recovered completely from a heart attack; Dr. Carl Skottsberg, who recently died; and Dr. Earl Edward Sherff, for whom the Science Building at Illinois Wesleyan University in Bloomington was named the "Earl Edward Sherff Hall of Science" on Commencement Day on June 2. (O. Degener)

TENTH INTERNATIONAL BOTANICAL CONGRESS: The Congress will meet in Edinburgh, Great Britain, August 3-12, 1964. The Nomenclature Section sessions will be held from July 29 to August 1. Proposals regarding the International Code of Botanical Nomenclature (1961) should be submitted to the Rapporteur-général, Dr. J. Lanjouw (International Bureau for Plant Taxonomy and Nomenclature, 106 Lange Nieuwstraat, Utrecht, Netherlands). The nomenclature proposals will be presented to the Congress in a "Synopsis of Proposals" to be published in January 1964. Officers of the Bureau of Nomenclature are: President - R. C. Rollins, Gray Herbarium, Harvard University, Cambridge 38, Mass.; Vice-Presidents - H. Hara, Tokyo; S. H. Mamay, Washington, D. C.; Y. I. Prokhanov, Makhatchkala; W. Robyns, Brussels; and R. Ross, London; Recorder - J. S. L. Gilmour, University Botanic Garden, Cambridge, Great Britain; Rapporteur-général - J. Lanjouw, I. A. P. T., Utrecht, Netherlands; Vice-Rapporteur - F. A. Stafleu, I. A. P. T., Utrecht. (Taxon XII(2): 88, 1963)

LOBELIOIDS: The publication by Joseph F. Rock, "A monographic study of the Hawaiian species of the tribe Lobelioideae, family Campanulaceae" (Bishop Museum Memoirs VII(2): 1-394, pls. 1-218), is still available. The price of this book, effective July 1, 1963, is $10.00. Copies may be obtained from the Bishop Museum Press, Honolulu, Hawaii, 96819. (AKC)

COCONUT EXPERIMENT STATION: Late in 1962 the Institut de Recherches pour les Huiles et Oléagineux (IRHO) set up a coconut experiment station at Espiritu-Santo in New Hebrides. A similar station is also operated on Rangiroa atoll in the Tuamotu Group. The work of the New Hebrides station is directed towards the improvement of coconut production of the high lands and its program includes breeding and selection, fertilizer trials, and experimental studies on plantation establishment. (S.P.Bul. 12(3): 33, 1963)

UNESCO MEETINGS: The UNESCO Visiting Committee for Tropical Herbaria met on June 28-29 at the Herbarium of the Singapore Botanical Garden. Each member had stopped at a number of herbaria in India, Southeast Asia, and the Pacific area enroute to Singapore. This Committee has been set up by UNESCO to advise and assist the authorities of herbaria located in the tropics in any way possible. Stopovers were made enroute to the annual meetings to learn as much as possible of the condition of these institutions. Courses for the training of herbarium technicians are planned. One of the principal items on the agenda at the Singapore meeting was the consideration of a draft of a manual of techniques and procedures for tropical herbaria, prepared under the sponsorship of the Committee and to be published by or at the direction of UNESCO.

The UNESCO Vegetation Symposium was held on July 2-9 at Kuching, Sarawak, with field excursions running until July 21 in Sarawak, Brunei, and North Borneo (Sabah), conducted by the forest departments of these states. In the latter country a number of the participants scaled the great mountain, Kinabalu, a granite peak about the height of Mauna Loa and a famous botanical collecting ground now being made into a national park. The symposium, attended by about 35 people, was on the recent results in tropical ecology and on quantitative methods in tropical ecology. There were many interesting papers on the rain-forests of the Indo-Pacific region, and some discussions of methodology. Dr. George W. Gillett, newly appointed taxonomist on the faculty of the Department of Botany of the University of Hawaii, was present. It is anticipated that the Symposium will be published during the course of the coming year. The Symposium was organized by Dr. J. A. R. Anderson, Forest Research Officer of Sarawak.

(F. R. Fosberg)

VISITORS: In late July Dr. F. R. Fosberg of the Pacific Vegetation Project, Washington, D. C., paid a brief visit to Professor Maxwell S. Doty of the University of Hawaii, to discuss research programs. He was on his way back from a trip around the world to attend two UNESCO meetings in the Malaysian area.

In early July Dr. A. C. Smith, Assistant Secretary of the Smithsonian Institution, visited the B. P. Bishop Museum and the University of Hawaii after attending the UNESCO meeting in Singapore. He returned to Honolulu in September to confer with Dr. Robert Hiatt, Vice-President for Academic Affairs, University of Hawaii (see "University of Hawaii" column). (AKC)

NATIONAL PARK SURVEY: A survey by the National Park Service of the island of Kauai was made this summer. Certain areas on that island are being considered for incorporation in the National Parks system. Harland Bartholomew & Associates are the local consultants. Members of the survey team included Donald Woolbrink and Robert Wray of the local research firm; Leo Diederich, Assistant Western Regional Director; Ronald N. Mortimore, Park Planner; Fred Johnston, Superintendent, Hawaii Volcanoes National Park; and William Kikuchi and Alvin K. Chock, B. P. Bishop Museum. Some of the team members also visited Maui and Hawaii. (AKC)

UNIVERSITY OF BRITISH COLUMBIA: Dr. Vladimir J. Krajina, author of this issue's feature story, writes that Richard Kuramoto, who is studying for his Master's degree, L. K. Wade, and he spent two months collecting in the Arctic this past summer. Krajina plans to continue his work on the determination of the Hawaiian plants which he collected in 1961-62, and hopes to return to Hawaii in the summer of 1965. (AKC)

BOTANICAL NOTES (Continued)

E. J. BRITTEN TO LEAVE: Dr. Edward J. Britten, Professor of Agronomy, University of Hawaii, will leave on January 26, 1964, to take his new post as Professor of Agriculture (Dean of the College of Agriculture) at the University of Queensland in Brisbane, Australia. He received his BS and MS from the University of Saskatchewan and his PhD from the University of Wisconsin. He has been in Hawaii since 1947 when he joined the Department of Botany to teach anatomy and genetics. In 1954 he joined the Department of Agronomy and Soil Science. Britten is a past President of the Hawaiian Botanical Society and the current Parlementarian. He has also been an active member in many other local scientific organizations. (AKC)

BOTANICAL FORAYS: Miss Beatrice Krauss, who arranged the summer trips, relates that there was a great deal of enthusiasm from the foray participants. The trips were successful, and the idea of monthly trips has been expressed. About 30 were on the Kaena and Palikea trips. Tom McGuire, retired Territorial Forester, led both trips. During the Palikea trip he revisted a grove of 1,000 redwoods which he had planted in 1928. (BK & AKC)

P L A N T Q U A R A N T I N E D I V I S I O N

DEPARTURES: The following Plant Quarantine Inspectors have transferred to the mainland ports indicated: former Principal Assistant Dean C. Hamilton, Jr., is now the Inspector-in-Charge at Travis Air Force Base, California (a new PQ station); former Shift Supervisor Mosco W. Love, Jr., now Principal Assistant at Charleston, S. C.; Kenneth Ross, Portland, Oregon; William Roberts, Miami, Florida; Alfred Douglas, New York, New York; Gary Holscher, Savannah, Georgia; and Gerald Brown, Baton Rouge, Louisiana. Soon to depart for new duty stations are Norman E. Neff, Hilo; and Francis L. Madinger, Port Pathologist, New York International Airport. Howard A. Woolford retired after many years of PQ service, and Michael Mizelle resigned to go on a world tour.

ARRIVALS: Eugene H. Davidson replaced Hamilton as Principal Assistant in Honolulu. He transferred from El Paso, where he was Principal Assistant. Davidson received his BS from Colorado State University and his MS in Entomology from Kansas State University. He was formerly stationed in Honolulu as an Inspector. His present duty station is at Honolulu International Airport where he is Airports Supervisor.

The following recently arrived in Honolulu from the New York Training Center: Alden Paterson, Wayne Fontanelle, and Eugene Legare. Amos K. L. Chun transferred from Laredo, Texas; Wallace K. C. Chun, from Hilo, where he was Inspector-in-Charge; and George Sadoyama, from Nogales, Arizona. (AKC)

U N I V E R S I T Y O F H A W A I I

DIRECTOR OF RESEARCH: Dr. A. C. Smith, Assistant Secretary of the Smithsonian Institution, has been appointed Director of Research at the University. He will also be a faculty member of the Department of Botany.

Smith received his bachelor's and doctor's degrees from Columbia University and began his botanical career as Assistant Curator at the New York Botanical Garden. Later he was promoted to Associate Curator. In 1940 he joined the Arnold Arboretum, Harvard University, as Curator of the Herbarium.

In 1948 he became Curator of the Division of Phanerogams at Smithsonian Institution, holding this position until 1956 when he became Program Director of Systematic Biology of the National Science Foundation. In 1958 he became the Director of the Museum of Natural History, U. S. National Museum, Smithsonian Institution, and this past year was promoted to his present position. He has also served as a member of the Advisory Panel for Systematic Biology and for Biological Facilities of the National Science Foundation.

He served as Editor of Brittonia in 1934-40 of the Journal of the Arnold Arboretum in 1941-48, and of Sargentia in 1942-48. He was a B. P. Bishop Museum-Yale University Fellow and did research work on the flora of Fiji. He was also later a Guggenheim Fellow.

Smith is a member of many professional societies and is a past President and present AAAS Representative of the American Society of Plant Taxonomists and past Vice-President of the International Association for Plant Taxonomists. He has been a delegate to several International Botanical Congresses and was Vice-President of the Systematic Section of the 1950 Stockholm Congress. Smith was also organizer of the Botany Section of the 10th Pacific Science Congress which was held in Honolulu in 1961.

He has participated in many botanical expeditions to Central and South America and has done field work in Fiji. His specialty is the taxonomy and phytogeography of flowering plants, especially of tropical America and the Southwest Pacific.

Smith replaces Dr. Robert W. Hiatt, who became Vice-President for Academic Affairs in July.

DEPARTMENT OF BOTANY FACULTY:

Dr. Gladys E. Baker, Professor of Botany, returns to Hawaii after a year's absence. She was Visiting Professor of Botany in 1961-62. She received her bachelor's and master's degrees from the University of Iowa and her doctorate from Washington University (St. Louis), where she was Barr Fellow. She was an Instructor in Biology at Hunter College and has been on the Department of Plant Science faculty at Vassar College since 1940. Several summers have been spent at the Flathead Lake Biological Station in Montana, where she worked on aquatic fungi. Her fields of specialization include the cytology and morphology of myxomycetes, lichens, and basidiomycetes, and the cytogenetics of imperfect fungi. She plans to do work on the soil and aquatic fungi in Hawaii.

Dr. George W. Gillett, Associate Professor, arrived early last month. He comes to Hawaii from the Department of Botany and Plant Pathology, Michigan State University, via Turku University in Finland where he held a Fulbright grant last year. He received his B.S. from Iowa State College and his M.F. and Ph.D. from the University of California (Berkeley). For several summers he was Ranger-Naturalist at Lassen Volcanic National Park. His fields of specialization have been the biosystematics of flowering plants, cytogenetics, floras of volcanic regions, and an experimental study of variation in Phacelia (Hydrophyllaceae). He plans to undertake research on Hawaiian flowering plants.

DEPARTMENT OF BOTANY FACULTY: (Continued)

Dr. Dieter Mueller-Dombois, Assistant Professor, is another new member of the Botany faculty. He received the Diplom Landwirt from the Technical Institute at Stuttgart-Hohenheim and his B.S. in Forestry from The University of British Columbia. His doctoral degree was in forest ecology at U.B.C., where he worked under Dr. Vladimir J. Krajina. Since 1958 he has been Research Officer in the Forest Research Division of the Canadian Department of Forestry, where his work was concerned with ecological classification, soil moisture relationships, and experiments in tree growth. His research work here will be in ecology.

Dr. Charles H. Lamoureux will continue to serve as Department Chairman. There are 29 graduate students in the department this semester. (AKC)

P I N E A P P L E R E S E A R C H I N S T I T U T E

Dr. Robert L. Cushing, Director, will leave PRI to become Director of the Experiment Station of the Hawaiian Sugar Planters' Association in December. Prior to joining the Institute, he was employed by Dole Pineapple Company and received his doctorate from Cornell University. He has done work on the genetics of corn. He became PRI's Assistant Director in 1951, served as Acting Director in 1952-53, and became Director in 1953.

Dr. Carl H. Spiegelberg, Pathologist, retired on August 31 after 34 years of service with PRI.

The annual budget of PRI has been severly curtailed and as a result of this Dr. Paul C. Ekern, Jr., will take a temporary position for several months at the Department of Irrigation, University of California at Davis; and Dr. Howard N. Klemmer has joined the Pacific Bio-Medical Center at the University of Hawaii. (REL)

C O N S E R V A T I O N C O U N C I L F O R H A W A I I *

EXECUTIVE BOARD MEETINGS will be held on the first Tuesday of each month, at 7:30 p.m., at the B. P. Bishop Museum.

THE THIRD GENERAL MEETING was held in August and the following motions were passed: that the President write a letter to the Governor stressing the need for an independent conservationist on the Land Use Commission, urge prompt appointment of a strong man to head the Department of Land and Natural Resources, and also point out the advisability of naming the Land Use Commission as soon as possible; and indicate the wish of the Council that there be open public hearings on the matter of the General Plan for the City and County of Honolulu.

STATE LAND USE ACT: Act 187 was rewritten by the last Legislature, and the "Greenbelt Law" is now Act 205. Although the format appears greatly changed, the law is not. Four major changes are: extension of deadlines for the preparation of proposed boundaries of the conservation, agricultural, rural, and urban districts to January 1, 1964, and the district boundaries for all countries must be adopted in final form during the period of May 1---July 1, 1964; the creation of a "rural" district to include small farms mixed with very low density residential lots (one-half acre minimum); mechanical procedure for the special permit---the county now receives and hears the petition, renders a decision, and any affirmative action to be reviewed by the Land Use Commission; and the wording of the Act clarified and made more specific in regard to county zoning powers in the rural and agricultural districts. Other changes pertain to the provision for boundary amendments.

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* Newsletter, the Conservation Council for Hawaii 2(2), September 1963.

J O S E P H F. R O C K M E M O R I A L L I B R A R Y (continued from page 108)

A recent gift to the new library was the rare second edition of Carlos Linnaeus' Genera Plantarum (1743). The valuable two volume work was given by Paul C. Hutchison, Senior Botanist, University of California Botanical Gardens. Other gifts included an extensive collection of old botanical prints from an anonymous donor, and sets of journals and books. (Charles Middleton)

H A W A I I A N B O T A N I C A L G A R D E N S F O U N D A T I O N, I N C.

Senate Bill 1991 was introduced in the Senate of the United States (88th Congress, 1st Session) on August 6 by Senators Daniel K. Inouye and Hiram L. Fong of Hawaii. It was read twice and referred to the Committee on Judiciary.

The bill provides a charter by Act of Congress the National Tropical Botanical Garden. It names the incorporators of the corporation (National Tropical Botanical Garden) and initial members of the Board of Trustees, who are: Henry Francis duPont, Winterthur, Delaware; Deane Waldo Malott, Ithaca, N. Y.; Horace Marden Albright, Los Angeles, Calif.; Robert Allerton, Lawai, Kauai, Hawaii; and Paul Bigelow Sears, New Haven, Conn.

The purposes and objects of the Garden are to establish an educational and scientific center in the form of a tropical botanical garden for research in basic and applied tropical botany and to collect and cultivate tropical flora and preserve those species threatened with extinction.

The coporation, with a limit of 15 trustees, shall initially have its principal office in the District of Columbia and later at such place determined by the board of trustees. (C. E. Hartt)

A TV program in July showed pictures of proposed sites at Kahana, Waiahole, and upper Manoa. F. Teho monitored the program, and the panel members consisted of S. Goto, Mrs. A. Lester Marks, W. W. G. Moir, Mrs. Dudley Pratt, and M. M. Ross. Details of the proposed National Tropical Botanical Garden were discussed by the panel.

(M. M. Ross)

HAWAIIAN BOTANICAL SOCIETY MEETING

DATE: Monday, October 7, 1963 - 7:30 p. m.
PLACE: Agee Hall, Experiment Station of the Hawaiian Sugar Planters' Association, 1527 Keeaumoku Street, Honolulu.
SUBJECT: "Cactus Country" (illustrated).
SPEAKER: Ernest G. Holt, a retired biologist, conservationist, and administrator, who began his biological career 51 years ago as a field assistant with the old U. S. Biological Survey. After service with the Army in World War I he spent three years in Brazil, including one year on an exploring expedition with the late Col. P. H. Fawcett. Then followed collecting expeditions in Brazil for the American Museum of Natural History, in Florida for the Cleveland Museum of Natural History, in British Honduras and Venezuela for the Carnegie Museum, and in Venezuela and Brazil for the National Geographic Society. He served one term as Director of Sanctuaries for the National Audubon Society. He returned to Government Service when the Soil Conservation Service was set up, and organized and directed the biological work of that Service until the outbreak of World War II, when he returned to Latin America to handle the procurement of wild rubber in Central America. In 1949-50 he served as Conservation Officer for the Trust Territory of the Pacific Islands, and in 1951 returned to Honduras for the Institute of Inter-American Affairs to organize a government agricultural service. Holt retired in 1952, and after some extensive traveling, settled down in Honolulu in 1959. His bibliography numbers 115 titles.

EDITOR'S NOTES

The Editor would like to express his thanks and appreciation to Maxwell S. Doty and Charles H. Lamoureux for editing and producing the June issue of the Newsletter. Thanks are also due to Beatrice Krauss for arranging the botanical forays held during the summer, Otto Degener and C. H. Lamoureux for preparing the "trail guides," and Tom McGuire for leading the trips.

Society members are reminded that the articles and news stories should be submitted to him on or before the 15th of each month prior to publication. These items should be on the Editor's desk by that time. The new Assistant Editor, Henry O. Whittier, will telephone the various reporters on the 14th or 15th of each month for news items. He will also undertake the column on "Recent Pacific Publications." The bibliographic items cited in this column are entered in the Pacific Scientific Information Center's files.

The production portion of the Newsletter will now be under the direction of Wallace G. Sanford of the Pineapple Research Institute of Hawaii. He will also be responsible for the distribution of each issue. Address changes should be submitted to the Secretary, who will notify the Managing Editor.

DIRECTORY: Society members who have not completed the index forms which were included in the June Newsletter should submit them as soon as possible. Additional forms may be obtained from the Society Secretary. It is now anticipated that the Directory will not be published this fall as originally planned, but in January 1964. The deadline for the submission of the index forms is November 25, 1963. The forms need be submitted only if the information in the 1962 Directory is inadequate, incomplete, or to be changed. They should be sent to the Hawaiian Botanical Society, c/o Department of Botany, University of Hawaii, Honolulu, Hawaii, 96822.

IN MEMORIAM: We would like to extend our sympathy to Mrs. Inga Skottsberg. The loss of her husband, Professor Carl Skottsberg, is also that of Hawaii and the Pacific. Dr. Skottsberg, a great Swedish botanist, was for the past forty years closely associated with the Bernice P. Bishop Museum and a brief resume of his life, prepared by E. H. Bryan, Jr., is included in this issue.

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c/o Department of Botany, University of Hawaii, Honolulu 14, Hawaii

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The HAWAIIAN BOTANICAL SOCIETY was founded in 1924 to "advance the science of Botany in all its applications, encourage research in Botany in all its phases," and "promote the welfare of its members and to develop the spirit of good fellowship and cooperation among them." "Any person interested in the plant life of the Hawaiian Islands is eligible for membership in this Society."

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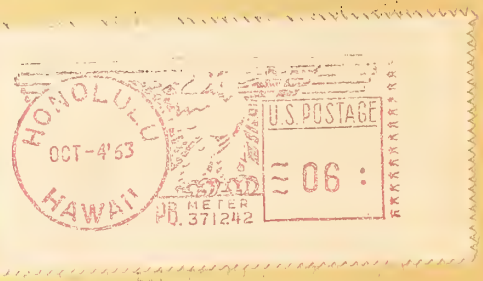
The Hawaiian Botanical Society Newsletter is published monthly, except during the summer months of July, August, and September. It is distributed to all Society members and other interested individuals and institutions, with the purpose of informing them about botanical news and progress in Hawaii and the Pacific. News contributions and articles are welcomed. The deadline for submission of news items is the 20th of each month prior to publication.

Duplicated at the Pineapple Research Institute of Hawaii.

Membership Dues are $2.00 per calender year and include receipt of the Newsletter.

HAWAIIAN BOTANICAL SOCIETY
c/o Department of Botany
University of Hawaii
Honolulu 14, Hawaii



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